LEUCOCRINUM MONTANUM Nutt., var. **fibrosum**, var. nov. Formae typicae similis sed radix cum fibris crispis conspicuis.—NEVADA: "form" near Oreana, Humboldt Valley, alt. 4,500 ft. June, 1868. *S. Watson* 1177; Winnemucca, May 17, 1917, *Wooton;* Paradise Valley, Humboldt Co., Apr. 30, 1905, *P. B. Kennedy* 1047 (TYPE, in U. S. National Herbarium).

Leaves more firm, strongly persistent on the rootstock as a mass of curled fibers; otherwise similar to the species.

Many young and old plants growing around Denver, Colorado, as well as material from other states show few or no fibers remaining from dead leaves. If present they are not strongly attached.—E. H. KELSO, Washington, D. C.

HETEROCHROMISM IN ARCTOSTAPHYLOS UVA-URSI, VAR. COACTILIS[1]

M. L. FERNALD

ON October 9th, 1932, I had a group of students on the annual field-trip of "Botany 7" to Cape Cod. Visiting the eastern "fore-arm" of the Cape to show them the great boulderless downs carpeted with *Corema Conradii* Torr. and a fine assemblage of *Hudsonia* (*H. ericoides* L., *H. tomentosa* Nutt. and the somewhat intermediate but more northern *H. tomentosa*, var. *intermedia* Peck) interspersed with the characteristic broad carpets of *Arctostaphylos Uva-ursi*, var. *coactilis* Fern. & Macbr. RHODORA, xvi. 212 (1914), I decided to extend the trip into the northeastern corner of Wellfleet, in order to exhibit the well-known station[2] there of *Opuntia humifusa* Raf. (*O. vulgaris* of Gray's Man. not Mill.).

Walking through the dry pitch pine woods, one of the students, Mr. George B. Rossbach, picked a flowering sprig from the Bearberry, with vivid carmine to purple slender flowers. I had grown hardened to the discovery of unusual plants on the Cape, but when further search showed that many of the carpets of *Arctostaphylos* in this part of Wellfleet were bearing abundant October inflorescences of these bright red slenderly barrel-shaped or subcylindric flowers, the amazement of the entire party can be imagined. On October 13, I returned with Mr. Charles Bullard and my son, Henry G. Fernald, to Wellfleet and collected for the *Plantae Exsiccatae Grayanae* 110 sheets of flowering material, and still later, at the end of the month, visiting Wellfleet with a class of Radcliffe students, we found the

[1] Published with aid to RHODORA from the National Academy of Sciences.

[2] See F. S. Collins, RHODORA, xvi. 102 (1914).

carmine or "Pomegranate purple" or "Bordeaux" (of Ridgeway) flowers still abundant in the woods and in half-shade. On the open sands the red autumnal flowers were shriveled but in the woods and their openings they were apparently going to linger until winter.

On the trip with Mr. Bullard and my son we found a few (but very few) whitish or pale-pink urceolate and comparatively short flowers such as abound in April and May. These were on plants which bore in abundance the slender and longer red or purple flowers and sometimes the two colors and forms were found in a single inflorescence. This anomalous situation clearly disposed of any temptation to treat the novel autumn-flowering plants as a new species; it was evident that we were dealing with heterochromism in individual plants. On October 13th, Mr. Bullard, my son and I traced the red-flowered colonies southward at least to Eastham. South and west of there (on the central Cape and in Plymouth) we found no such flowers, nor were they seen in the many colonies of *Arctostaphylos* in northeastern Massachusetts.

On May 9, 1933, returning to the marked colony at Wellfleet, where in mid-October we had secured more than 100 sheets of red-flowering specimens, my son and I found the same carpets heavily loaded with the ordinary vernal broadly urceolate white to pale-pink flowers. So abundant were these as to whiten the patches, but interspersed with the abundant white to pale-pink inflorescences there were few and scattered vivid red ones quite like those of the late autumn but smaller, the slenderly subcylindric corollas strongly contrasting in size and shape, as well as color, with the abundant pale vernal flowers.

We hoped that the two colors were on separate plants and for a time this seemed to be the case, but soon we found the two strongly contrasted colors on identical branches and in some cases mixed in single inflorescences, while very rarely the red flowers approached in size and shape the urceolate whitish ones. On this trip we stopped midway in the township of Yarmouth (about 1 mile south of Bass River station) and the first patch of *Arctostaphylos* we looked at had one red inflorescence among the abundant whitish ones, but search revealed very few others.

Stopping on our return to Cambridge, at the Arnold Arboretum, we showed the spring collection to Mr. Alfred Rehder. His first response, on seeing only the slender red corollas, was the inevitable one, "surely a new species"; but upon seeing the plants with both

types of flowers his astonishment was as great as my own had been. Living branches were left with Mr. Rehder for cultivation at the Arnold Arboretum; others have been given to Miss Louisa Hunnewell; another has been placed in a bed of sand from the original station where I can personally watch it and we should know in another season whether these plants from Wellfleet regularly produce two types of inflorescences.

Dissection of flowers from the two types shows no structural differences: the anthers, stigmas and ovaries seem identical; but as yet we have no indication whether the two are equally fertile. As already stated, the red flowers, when fresh, commonly match the carmine or the "Pomegranate purple" of Ridgeway, but many of them are deeper or darker in color, approximately the "Bordeaux" of Ridgeway. Mrs. C. A. Weatherby most kindly made a water-color sketch of fresh carmine flowers now preserved at the Gray Herbarium; and my son has made color-plates by photography to preserve the original colors of the more purple tones. In drying the red or purple flowers tend to darken.

From our present knowledge the form of *Arctostaphylos Uva-ursi*, var. *coactilis* with abundant autumnal red or deep-purple flowers is apparently common on outer or "Lower" Cape Cod, especially in Wellfleet, becoming scarce westward, at least to Yarmouth; but on the "Upper Cape" it is unknown and it has not been found on the mainland of Massachusetts. Whether it is actually restricted to Cape Cod or whether it is of wider occurrence can be determined only by autumnal observation of colonies elsewhere in the range of var. *coactilis*. As a highly notable form this plant may be called

ARCTOSTAPHYLOS UVA-URSI (L.) Spreng., var. COACTILIS Fern. & Macbr., forma **heterochroma**, f. nov., formae typicae simillima differt corollis florum autumnalium saepe carmino-rubris vel purpureis subcylindricis gracilibus et corollis florum vernalium plerisque albis vel pallide roseis urceolatis rariter rubro-purpureis elongatisque. —MASSACHUSETTS: abundant in open sandy woods, Wellfleet, October 9, 1932, *G. B. Rossbach, M. L. Fernald et al.* (TYPE in Gray Herb.), Oct. 13, 1932, *M. L. Fernald, Chas. Bullard & H. G. Fernald* in Pl. Exsicc. Gray., May 9, 1933, *M. L. & H. G. Fernald;* dry sandy pine woods, North Eastham, October 13, 1932, *Fernald, Bullard & Fernald;* dry sandy pine woods, Yarmouth, May 9, 1933, *Fernald & Fernald.*

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